Developmental Biology

An International Journal
Published under the Auspices of the
Society for Developmental Biology

EDITOR-IN-CHIEF: Igor B. Dawid

ASSOCIATE EDITORS

Developmental Biochemistry
L. Dennis Smith
David Epel
Developmental Cytology
Elizabeth D. Hay
Donald A. Fischman
Norton Bernhard Gilula

Developmental Genetics
Herbert Stern
Developmental Physiology
Gerald D. Fischbach
Experimental Morphogenesis
Peter J. Bryant
James Weston

EDITORIAL ASSISTANT: Barbara Murray

ADVISORY EDITOR
Elizabeth D. Hay

VOLUME 50, 1976

ACADEMIC PRESS
New York and London

Copyright © 1976 by Academic Press, Inc.

All Rights Reserved

No part of this publication may be reproduced or transmitted in any form, or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

Contents of Volume 50

NUMBER 1, MAY 1976

ull Papers

SUSAN P. BANKS-SCHLEGEL, TERENCE E. MARTIN, AND A. A. MOSCONA. Synthesis and Phosphorylation of Chromosomal Nonhistone Proteins during Embryonic Development of Neural Retina 1

JOHN W. SAUNDERS, JR., MARY T. GASSELING, AND JANICE E. ERRICK. Inductive Activity and Enduring Cellular Constitution of a Supernumerary Apical Ectodermal Ridge Grafted to the Limb Bud of the Chick Embryo 16

JANICE E. ERRICK AND JOHN W. SAUNDERS, JR. Limb Outgrowth in the Chick Embryo Induced by Dissociated and Reaggregated Cells of the Apical Ectodermal Ridge 26

JOHN P. PENNYPACKER AND PAUL F. GOETINCK. Biochemical and Ultrastructural Studies of Collagen and Proteochondroitin Sulfate in Normal and Nanomelic Cartilage 35

RUBEN ADLER, GLADYS TEITELMAN, AND ANGELA MARIA SUBURO. Cell Interactions and the Regulation of Cholinergic Enzymes during Neural Differentiation *in Vitro* 48

G. KAHLEM. Isolation and Localization by Histoimmunology of Isoperoxidases Specific for Male Flowers of the Dioecious Species *Mercurialis annua L.* 58

MICHAEL J. DEWEY, ANDRÉ G. GERVAIS, AND BEATRICE MINTZ. Brain and Ganglion Development from Two Genotypic Classes of Cells in Allophenic Mice 68

ROSLYN W. ORKIN, ROBERT M. PRATT, AND GEORGE R. MARTIN. Undersulfated Chondroitin Sulfate in the Cartilage Matrix of Brachymorphic Mice 82

F. RUDOLF TURNER AND A. P. MAHOWALD. Scanning Electron Microscopy of *Drosophila* Embryogenesis. 1. The Structure of the Egg Envelopes and the Formation of the Cellular Blastoderm 95

JEANNE MANSON, ROY TASSAVA, AND MARGARET NISHIKAWARA. Denervation Effects on Aspartate Carbamyl Transferase, Thymidine Kinase, and Uridine Kinase Activities in Newt Regenerates 109

ROBERT E. NELSON, CLAUDE P. SELITRENNIKOFF, AND RICHARD W. SIEGEL. Developmental Regulation of Nicotinamide Adenine Dinucleotide (Phosphate) Glycohydrolase in *Neurospora crassa* 122

MICHAEL J. MCLEAN AND NICK SPERELAKIS. Retention of Fully Differentiated Electrophysiological Properties of Chick Embryonic Heart Cells in Culture ... 134

NORTON B. GILULA, DON W. FAWCETT, AND AGUSTIN AOKI. The Sertoli Cell Occluding Junctions and Gap Junctions in Mature and Developing Mammalian Testis 142

RANDALL L. DIMOND, PAUL A. FARNSWORTH, AND WILLIAM F. LOOMIS. Isolation and Characterization of Mutations Affecting UDPG Pyrophosphorylase Activity in *Dictyostelium discoideum* 169

DAVID S. OSTROVSKY AND GEORGE W. NACE. Frog Lysozyme. II. Isozymes of Lysozyme during the Larval Development of the Leopard Frog, *Rana pipiens* 182

JOHN A. KIGER, JR. Cell Determination in *Drosophila* with Paradoxical Genotypes 187

RAYMOND M. BORLAND, JOHN D. BIGGERS, AND CLAUDE P. LECHENE. Kinetic Aspects of Rabbit Blastocoele Fluid Accumulation: An Application of Electron Probe Microanalysis 201

SUSAN V. BRYANT AND LAURIE E. ITEN. Supernumerary Limbs in Amphibians: Experimental Production in *Notophthalmus viridescens* and a New Interpretation of Their Formation 212

rief Notes

CHIAKI KATAGIRI AND MEGUMI MORIYA. Spermatozoan Response to the Toad Egg Matured after Removal of Germinal Vesicle 235

N. Sagata, K. Shiokawa, and K. Yamana. Polyadenylic Acid-Containing RNA and Its Polyadenylic Acid Sequences Newly Synthesized in Isolated Embryonic Cells of *Xenopus laevis* 24

Erratum 24
Features ..... f–

Number 2, June 1976

Eric Wieschaus and Walter Gehring. Clonal Analysis of Primordial Disc Cells in the Early Embryo of *Drosophila melanogaster* 24

C. R. Slater. Control of Myogenesis *in Vitro* by Chick Embryo Extract 26

Chris Darnbrough and Peter J. Ford. Cell-Free Translation of Messenger RNA from Oocytes of *Xenopus laevis* 28

Moriaki Hayashi and Ikuo Takeuchi. Quantitative Studies on Cell Differentiation during Morphogenesis of the Cellular Slime Mold *Dictyostelium discoideum* 30

Gabriel Gachelin, Marc Fellous, Jean-Louis Guenet, and Francois Jacob. Developmental Expression of an Early Embryonic Antigen Common to Mouse Spermatozoa and Cleavage Embryos, and to Human Spermatozoa: Its Expression during Spermatogenesis 31

P. A. Lawrence and G. Morata. Compartments in the Wing of *Drosophila:* A Study of the *engrailed* Gene 32

John P. Wourms. Annual Fish Oogenesis. I. Differentiation of the Mature Oocyte and Formation of the Primary Envelope 33

John P. Wourms and H. Sheldon. Annual Fish Oogenesis. II. Formation of the Secondary Egg Envelope 35

Jerome Cantor, Stanely S. Shapiro, and Michael I. Sherman. Chondroitin Sulfate Synthesis by Mouse Embryonic, Extraembryonic, and Teratoma Cells *in Vitro.* 36

Mary L. Mailman and Marc H. Dresden. Collagen Metabolism in the Regenerating Forelimb of *Notophthalmus viridescens:* Synthesis, Accumulation, and Maturation. 378

Shunji Natori. Selective Activation of RNA Polymerase I in Fat Body Nuclei of *Sarcophaga peregrina* Larvae by β-Ecdysone 395

Leslie J. Fisher. Synaptic Arrays of the Inner Plexiform Layer in the Developing Retina of *Xenopus* 402

David L. Krik and Marilyn M. Kirk. Protein Synthesis in *Volvox carteri* f. *nagariensis.* 413

Harold C. Slavkin and Pablo Bringas, Jr. Epithelial–Mesenchyme Interactions during Odontogenesis. IV. Morphological Evidence for Direct Heterotypic Cell–Cell Contacts 428

Robert Devlin. Mitochondrial Poly(A) RNA Synthesis during Early Sea Urchin Development. 443

John Lough and Richard Bischoff. Differential Sensitivity to 5-Bromodeoxyuridine during the S Phase of Synchronized Myogenic Cells 455

Gerold Schubiger. Adult Differentiation from Partial *Drosophila* Embryos after Egg Ligation during Stages of Nuclear Multiplication and Cellular Blastoderm .. 476

Vladimir Atryzek. Alteration in Timing of Cell Differentiation Resulting from Cell Interactions during Development of the Cellular Slime Mold *Dictyostelium discoideum.* 489

A. A. Neyfakh, M. A. Glushankova, and A. A. Kusakina. Time of Function of Genes Controlling Aldolase Activity in Loach Embryo Development 502

Brief Notes

H. S. Siegel and N. R. Gould. Chick Embryonic Plasma Proteins and Binding Capacity for Corticosterone 510

GENE L. TRUPIN. The Satellite Cells of Normal Anuran Skeletal Muscle 517
MICHAEL SOLRUSH. Glycosaminoglycan Synthesis in the Chick Gastrula 525
RALPH A. SORENSEN AND PAUL M. WASSARMAN. Relationship between Growth and Meiotic Maturation of the Mouse Oocyte 531
LLOYD J. FORMAN AND JOHN J. JUST. The Life Span of Red Blood Cells in the Amphibian Larvae, *Rana catesbeiana* 537
STEPHAN L. HELFAND, GARY A. SMITH, AND NORMAN K. WESSELLS. Survival and Development in Culture of Dissociated Parasympathetic Neurons from Ciliary Ganglia 541

rratum 548

uthor Index for Volume 50 549

The subject index for Volume 50 will appear in the December 1976 issue as part of a cumulative index for the year 1976.

Information for Authors

Developmental Biology will publish in English original papers and review articles bearg on problems of development in the broadest sense; it will contain papers dealing with nbryonic and postembryonic development, growth, regeneration, and tissue repair both plants and animals. Papers dealing with reproductive biology and biology of aging that veal fundamental mechanisms of general interest will also be published. The journal rves as a meeting ground for studies on development that employ techniques from a ide range of disciplines, e.g., biochemistry, biophysics, cytology, experimental morphoenesis, teratology, genetics, immunology, microbiology, pathology, pharmacology and ysiology. The journal aims for rapid publication; currently, publication time is 4–5 onths from date of acceptance.

Articles usually do not exceed 15,000 words and must be accompanied by an abstract at gives, in 200 words or less, a synopsis of the work, including methods and results. *rief notes* are 2500 words or less including the bibliography, which should contain only 2 references unless the abbreviated reference format is used (see directions under references). The conventional format is: abstract, introduction, methods and materials, results, and discussion, but authors are encouraged to present their material in the most gical and appropriate form.

Figures should be numbered consecutively in the order of their appearance and each hould have a descriptive legend. Mark all figures with the author's name and address.

Line drawings should be made with India ink on smooth white paper. Do not submit riginal line drawings larger in size than 13 × 10″; instead enclose smaller high quality rints for the printer and for editorial use (two copies). Be sure lettering is uniform and arge enough to allow for reduction and that the drawings when reduced will be either olumn (2⅝″) or page (5½″) width. A figure that is submitted 5¼″ wide with lettering mm high when reduced 50% will be a single column width. A figure submitted 11″ wide vith lettering 3 mm high when reduced 50% will be full page width.

Photographs submitted for publication must be the actual size for reproduction and arefully labeled with letters 2–4 mm high. The page size of the journal must be considred and the following format observed.

(1) Column width figures are to be no wider than 2⅝″ or longer than 8″.

(2) Page size figures should be 5½″ wide and no longer than 8″.

(3) If the author decides to bleed the page (no margins), figure numbers should be no loser than ¾″ to the margin to allow for trimming during binding of the journal. Figures o be bled must be 6⅞ × 10″ (submitted at 7 × 10¼″ to allow trimming).

Use unmounted figures where possible, but when several appear together as one plate, nount them on cardboard or paper as close together as possible. The engraver will tool hin white lines between figures. Give magnification in the legend or indicate with a μ narker on the photograph. Two pages of half-tone figures per article and ten pages of alf-tone figures per review article will be published without cost to the author; a charge f $50 per page will be required for pages in excess of this number. The author will defray he expense of colored plates.

Tables should be used to condense data referred to in the text. They should be typed n separate pages, numbered consecutively with Arabic numerals in order of mention n the text, and collected at the end of the manuscript. Give each table a concise, descriptive heading. Tables should be so composed that the content can be grasped without reference to the text.

References to the literature may be cited in one of the following forms: Doe (1965) has observed that . . . ; (Doe, 1955; Doe *et al.*, 1960); Doe 1961, p. 250). Use suffixes a, b, etc. following the date to distinguish two or more works by the same author(s) in the same year (Doe, 1960a, b). Alternatively, references may be referred to by number: Doe (1) has observed that . . . (see also 5, 10, 16). Arrange literature citations in the bibliography alphabetically according to the surname of the author, using the following order of items: author(s), date of publication, title of article or book, journal name, volume, number, inclusive pages, publisher and city (for books only). Abbreviate titles of journals in accord with Chemical Abstracts' Service Source Index. Number the references only if they are referred to by number in the text. For a brief note with more than twelve references, references in the text must be cited by number and titles omitted in the bibliography section. The same short form may be used with a full paper when an excessive number of references are quoted.

Galley proof should be read carefully as no page proof will be sent to authors. Be certain figures are the correct size and correctly reproduced either as halftones or line drawings and avoid excessive text changes that involve resetting. Reprints may be ordered when galley proof is returned. Fifty reprints are supplied gratis.

Manuscripts should be concise and consistent in style, spelling, and use of abbreviations. They must be typewritten, double-spaced, on one side of white bond paper about $8\frac{1}{2} \times 11''$ in size, with the pages numbered consecutively. Indicate the address for galley proof. Include with full length articles a running headline not exceeding 35 letters and spaces. Use footnotes sparingly, if at all. Cite them, using superscript numbers, in consecutive order in the text and type them consecutively on a separate sheet. Acknowledgments and figure legends should also be typed, double-spaced, as separate sections. Two copies of the manuscript (original and carbon) and two copies of the figures should be mailed to the new editor-in-chief Dr. Igor Dawid, Department of Embryology, Carnegie Institution of Washington, 115 West University Parkway, Baltimore, Maryland 21210.

Features will include announcements of meetings and courses in the field of developmental biology, and some meeting reports. Persons interested in preparing meeting reports are encouraged to contact the Editor.